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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,529

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Menachem Nathan

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EXAMINER

SCULLY, STEVEN M

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

06/23/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/531,529	Applicant(s) NATHAN ET AL.	
	Examiner Steven Scully	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-26 and 28-50 is/are pending in the application.
- 4a) Of the above claim(s) 1,3-25 and 39-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26 and 28-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/31/2006 and 07/26/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1795

THIN-FILM CATHODE FOR 3-DIMENSIONAL MICROBATTERY AND METHOD FOR PREPARING SUCH CATHODE

Examiner: Scully S.N.: 10/531,529 Art Unit: 1795 June 10, 2009

Election/Restrictions

1. Applicant's election without traverse of Group III, drawn to claims 26-38, in the reply filed on March 9, 2009 is acknowledged. Claims 2 and 27 have been canceled. Elected claims 26 and 32 and non-elected claims 1, 7, 14, 19, 39 and 44 are amended. Accordingly, claims 1, 3-25 and 39-50 are withdrawn from consideration, and claims 26 and 28-38 are pending in the application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 26, 28-30 and 32-37 and are rejected under 35 U.S.C. 102(b) as being anticipated by Nathan et al. (US 6,197,450).

With respect to claim 26, Nathan et al. disclose a microbattery, consisting of an anode, an electrolyte and a cathode on a perforated silicon wafer. See column 4, line 64-column 5, line 4; Figure 1A.

With respect to claim 28, Nathan et al. disclose the cathode material to be, for example, vanadium oxides. See column 2, lines 45-48.

With respect to claim 29, Nathan et al. disclose the substrate can be glass. Further, the substrate can optionally have a current collector. See column 2, lines 26-38.

With respect to claim 30, the claim limitations of claim 30 do not further limit the product of claim 29 because they are product-by-process limitations. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)

With respect to claims 32 and 34, Nathan et al. disclose the substrate is provided with a plurality of cavities with high aspect ratio, between about 2 to about 50, and with the anode, cathode, solid electrolyte layers and optional current collector layer being also deposited throughout the inner surface of the cavities. See claims 1 and 8.

With respect to claim 33, Nathan et al. disclose the cathodic layer, electrolyte layer and anodic layer are continuous. See Figure 1A.

With respect to claim 35, Nathan et al. disclose the cavities have a cylindrical geometry. See claim 9.

With respect to claims 36-37, Nathan et al. disclose the substrate material is made of a single crystal or amorphous material and is selected from glass, alumina,

Art Unit: 1795

semiconductor materials for use in microelectronics, or ceramic materials, and the substrate material is preferably silicon. See column 3, lines 25-34.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nathan et al. (US6,197,450) as applied to claims 26, 28-30 and 32-37 above, and further in view of Rigal et al. (US4,346,153).

With respect to claim 31, Nathan et al. disclose a carbon current collector. See column 6, lines 10-14. Nathan et al. do not disclose a conductive layer formed of at least one material selected from the group of claim 31. Rigal et al. disclose an electrode for a lead-acid storage cell. Rigal et al. disclose that current collectors have been used which are made of a material whose electric conductivity is higher than that of lead, such as copper. See column 1, lines 26-30. Further, copper is a well known metal for use as a current collector due to its good electrical conductivity and low electrical resistance. It would have been obvious to one of ordinary skill in the art at the time of the invention to use copper as the current collector of Nathan et al. because Rigal et al. teach that it has good electric conductivity.

Art Unit: 1795

6. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nathan et al. (US6,197,450) as applied to claims 26, 28 and 32-37 above, and further in view of Ohsawa et al. (US5,162,178).

With respect to claim 38, Nathan et al. disclose the cathodic layer to be LiCoO_2 , LiNiO_2 , LiMn_2O_4 , TiS_2 , V_2O_5 , V_3O_{13} or the lithiated form of these vanadium oxides. Thus, Nathan et al. do not disclose the cathodic layer comprises any of the materials listed in claim 38. Ohsawa et al. disclose a secondary battery where a current collect (substrate) (1) has an uneven rough surface (2) on which a thin film layer (3) of lithium or lithium alloy is formed. Examples of the positive active material include TiS_2 , MoS_2 , vanadium oxides, and so forth. See column 16, lines 27-35. Therefore, Ohsawa et al. show MoS_2 was an art-recognized equivalent for a positive active material and thus one of ordinary skill in the art would have found it obvious to substitute MoS_2 of Ohsawa et al. as the positive active material for TiS_2 , vanadium oxides or any of the various positive active materials as disclosed by Nathan et al.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

Art Unit: 1795

F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 26 and 28-38 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 11/374,469. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1, 3 and 5 disclose a perforated conductive substrate having a cathodic layer, an electrolyte layer and an anodic layer formed thereon. While '469 does not disclose thin films, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the battery of '469 using thin film electrodes and electrolyte to reduce the volume of the battery.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Scully whose telephone number is (571)270-5267. The examiner can normally be reached on Monday to Friday 7:30am to 5pm.

Art Unit: 1795

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571)272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. S./

Examiner, Art Unit 1795

/Dah-Wei D. Yuan/

Supervisory Patent Examiner, Art Unit 1795